

#### Note 1

**Cumulative Dissolved Oxygen exposure parameters:** Dissolved Oxygen conditions in the area affected do not readily lend themselves to a single numeric criterion. Aquatic organisms are harmed based on a combination of minimum oxygen concentration and duration of the low Dissolved Oxygen excursion. The department established exposure allowances based upon EPA research and data, for 0.5 mg/l and 0.3 mg/l increment ranges. (See Table A in this note.) Given the environmental variability, the department has used a minimum Dissolved Oxygen criterion of 3.0 mg/l with an exposure allowance of no more than 2 days.

Table A. Dissolved Oxygen Chronic Cumulative Exposure Criteria for incremental ranges (0.5 mg/l and 0.3 mg/l) applicable to Class SA and SB waters.		
Dissolved Oxygen Range (mg/l)		No. of Days Allowed
<4.8	≥ 4.5	30
<4.5	≥ 4.0	14
<4.0	≥ 3.5	7
<3.5	≥ 3.0	2

Because marine systems are variable, Dissolved Oxygen levels are unlikely to remain within one of the four incremental ranges presented in Table A. Typically, Dissolved Oxygen conditions would fall through a range to a minimum and then begin to rebound depending on weather and stratification conditions. To account for this, the number of days within each incremental Dissolved Oxygen range is pro-rated, as follows: A decimal fraction is calculated for each range, e.g., 10.5 days in the 4.5 - 4.8 mg/l range would produce a decimal fraction of 0.35 (0.35 = 10.5 days/ 30 days). As long as the sum of those fractions calculated for each range is less than 1.0, resource protection goals are maintained for larval recruitment.

In cases where data collection yields continuous Dissolved Oxygen readings or more frequent sampling results, the data can be interpreted using a 0.1 mg/l interval range. The number of allowable days is determined using the following method:

$$DOI = 13.0 / (2.80 + 1.84e^{-0.10t_i})$$

where:

DOI = allowable Dissolved Oxygen concentration (mg/l)

$t_i$  = exposure interval duration in days

i = exposure interval

However, since most sampling programs do not result in frequent readings, a greater interval (presented in Table A) is recommended. Use of a larger interval results in a larger sum of fractions and is subsequently a more conservative measure of consistency with the Connecticut Water Quality Standards.